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Static Electricity Precautions

1. Don't take this motherboard and components out of their original static-proof package until you are ready to install them.
2. While installing, please wear a grounded wrist strap if possible. If you don't have a wrist strap, discharge static electricity by touching the bare metal of the system chassis.
3. Carefully hold this motherboard by its edges. Do not touch those components unless it is absolutely necessary. Put this motherboard on the top of static-protection package with component side facing up while installing.

Pre-Installation Inspection

1. Inspect this motherboard whether there are any damages to components and connectors on the board.
2. If you suspect this motherboard has been damaged, do not connect power to the system. Contact your motherboard vendor about those damages.

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PI915GVM/PI915GLM Series V1.0
March 2005

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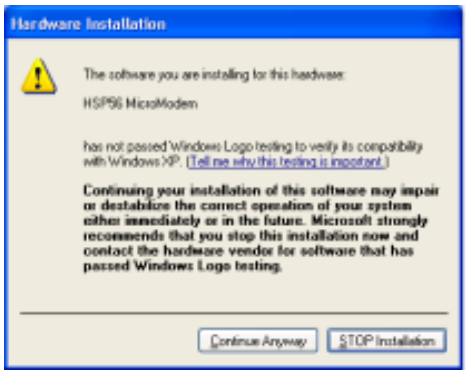
Notice:

Owing to Microsoft's certifying schedule is various to every supplier, we might have some drivers not certified yet by Microsoft. Therefore, it might happen under Windows XP that a dialogue box (shown as below) pop out warning you this software has not passed Windows Logo testing to verify its compatibility with Windows XP. Please rest assured that our RD department has already tested and verified these drivers. Just click the "Continue Anyway" button and go ahead the installation.


Hardware Installation
The software you are installing for this hardware:
HSP56 MicroModem
has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)
Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
Continue Anyway
STOP Installation

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Chapter 1 Introduction

This motherboard has a **LGA775 socket** for latest **Intel Pentium 4/Celeron** processors with **Hyper-Threading Technology** and Front-Side Bus (FSB) speeds up to **800** MHz. Hyper-Threading Technology, designed to take advantage of the multitasking features in Windows XP, gives you the power to do more things at once.

This motherboard integrates the **Intel 915GV/915GL** Northbridge along with **Intel I/O Controller Hub 6 (ICH6)** that supports the **Serial ATA** interface for high-performance and mainstream desktop PCs; the built-in **USB 2.0** providing higher bandwidth, implementing **Universal Serial Bus Specification Revision 2.0** and is compliant with **UHCI 1.1** and **EHCI 1.0**.

It supports 6-channel **AC'97 Audio Codec** and provides one **IDE Ultra DMA** 100/66 channel. It has one **PCI-E Ultra slot**, one **PCI Express x1** and two 32-bit **PCI** slots. There is a full set of I/O ports including two PS/2 ports for mouse and keyboard, one VGA port, one serial port, one parallel port, one LAN port (optional), six audio jacks for micropone, line-in and line-out, and four back-panel USB 2.0 ports. In addition, onboard USB headers provide extra ports by connecting the extended USB module to the motherboard.

It is a **Micro ATX** motherboard and has power connectors for an ATX power supply.

Note: 915GV chipset can only support 256-Mb, 512-Mb and 1-Gb DDR technologies for x8 and x16 device, NOT support 128-Mb DDR technology. That is, 256 MB Double Side Memory Module & 128 MB Single Side Memory Module are NOT support.

Key Features

The key features of this motherboard include:

LGA775 Socket Processor Support

- Supports the latest **Intel Pentium 4/Celeron Series** processors with **Hyper-Threading Technology**
- Supports up to **800 MHz** Front-Side Bus

Note: Hyper-Threading technology enables the operating system into thinking it's hooked up to two processors, allowing two threads to be run in parallel, both on separate 'logical' processors within the same physical processor.

Chipset

There are **Intel 915GV/915GL Northbridge** and **Intel I/O Controller Hub 6 (ICH6)** in the chipsets in accordance with an innovative and scalable architecture with proven reliability and performance.

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This series has two models: PI915GVM and PI915GLM. Here is a comparison list between these two models:

Model	Northbridge	Southbridge	Function
PI915**GVM**	Intel 915**GV**	ICH6	Supports **DDR2 533** / DDR400
PI915GLM	Intel 915GL	ICH6	Supports DDR400

- Processore Interface
  -One Intel Pentium 4 processor or Intel Celeron D processor including 775-Land package
  –533 MT/s (133 MHz) FSB and 800 MT/s (200 MHz) FSB
  –Supports Hyper-Threading Technology (HT Technology)
  –FSB Dynamic Bus Inversion (DBI)
- System Memory
  –One or two 64-bit wide DDR/DDR2 SDRAM data channels (suppports DDR400 or DDR333, 1 DIMM, 2 Channels only)
  –Bandwidth up to 8.5 GB/s (DDR2 533) in dual-channel Interleaved mode
  –256-Mb, 512-Mb and 1-Gb DDR/DDR2 technologies
- Integrated Graphics Device
  –Core Frequency of 333 MHz
  –High-Quality 3D Setup and Render Engine
  –3D Graphics Rendering Enhancements
- PCI Express: 4 PCI Express root ports and Fully PCI Express 1.0a compliant
- PCI Bus Interface: Supports PCI Rev 2.3 Specification at 33 MHz
- Integrated Serial ATA Host Controller: Four ports and Data transfer rates up to 1.5 Gb/s (150 MB/s)
- Integrated IDE Controller
  –Independent timing of up to two drives
  –Ultra ATA/100/66/33, BMIDE and PIO modes
- AC-Link for Audio and Telephony CODECs: Support for three AC'97 2.3 codecs
- USB2.0
  –Includes four UHCI Host Controllers, supporting eight external ports
  –Includes one EHCI Host Controller that supports all eight ports
- Integrated LAN Controller
  –WfM 2.0 and IEEE 802.3 Compliant
  –10/100 Mb/s Ethernet Support

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Memory Support

- Two 184-pin 2.5V DIMM sockets for DDR SDRAM DDR400 memory modules, and two 240-pin 1.8V for DDR2 **533**/DDR400 (for NB Intel 915**GV** only)
- Supports **DDR2 533**/DDR400(for NB Intel 915**GV** only) or DDR400 memory bus
- Maximum installed memory is 2GB

Note: You can not use DDR2 533/400 and DDR400 simultaneously. Only use either DDR2 533/400 or DDR400 memory modules!

Expansion Slots

- One PCI-E Ultra slot, one PCI Express x1 slot
- Two 32-bit PCI slots for PCI 2.3-compliant bus interface
- One CNR slot

Onboard IDE channels

- One IDE Channel supporting ATA-66, ATA-100
- Supports PIO (Programmable Input/Output) and DMA (Direct Memory Access) modes
- Supports IDE Ultra DMA bus mastering with transfer rates of **100**/66/33 MB/sec

Serial ATA

- Four Serial ATA Connectors
- Transfer rate exceeding best ATA (~150 MB/s) with scalability to higher rates
- Low pin count for both host and devices

AC'97 Audio Codec

- Compliant with AC'97 2.3 specification
- Front-Out, Surround-Out, MIC-In and LINE-In Jack Sensing
- Three analog line-level stereo inputs with 5-bit volume control: LINE_IN, CD, AUX
- Two analog line-level mono input
- Standard 48-Pin LQFP

Onboard I/O Ports

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- One VGA port
- One LAN port (optional)
- Four back-panel USB2.0 ports
- Audio jacks for microphone, line-in and line-out

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Fast Ethernet LAN (optional)

- Integrates Fast Ethernet MAC, physical chip, and transceiver onto a single chip
- 10Mbps and 100Mbps operation
- Supports 10Mbps and 100Mbps N-way auto-negotiation
- Complies with PC99/PC2001 standards
- Supports ACPI power management
- Half/Full duplex capability
- Supports Full Duplex Flow Control (IEEE 802.3x)

USB 2.0

- Compliant with Universal Serial Bus Specification Revision 2.0
- Compliant with Intel's Enhanced Host Controller Interface Specification Revision 1.0
- Compliant with Universal Host Controller Interface Specification Revision 1.1
- PCI multi-function device consists of two **UHCI Host Controller** cores for full-/low-speed signaling and one **EHCI Host Controller** core for high-speed signaling
- Root hub consists 4 downstream facing ports with integrated physical layer transceivers shared by **UHCI** and **EHCI** Host Controller, up to eight functional ports
- Support PCI-Bus Power Management Interface Specification release 1.1
- Legacy support for all downstream facing ports

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters and memory timing
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

Dimensions

- Micro ATX form factor of 244 x 244 mm

Note: Hardware specifications and software items are subject to change without notification.

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Package Contents

Your motherboard package ships with the following items:

- ❑ The motherboard
- ❑ The User's Guide
- ❑ One diskette drive ribbon cable (optional)
- ❑ One IDE drive ribbon cable
- ❑ The Software support CD

Optional Accessories

You can purchase the following optional accessories for this motherboard.

- ❑ The Extended USB module
- ❑ The CNR v.90 56K Fax/Modem card
- ❑ The Serial ATA cable
- ❑ The Serial ATA power cable

Note: You can purchase your own optional accessories from the third party, but please contact your local vendor on any issues of the specification and compatibility.

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Chapter 2 Motherboard Installation

To install this motherboard in a system, please follow these instructions in this chapter:

- Identify the motherboard components
- Install a CPU
- Install one or more system memory modules
- Make sure all jumpers and switches are set correctly
- Install this motherboard in a system chassis (case)
- Connect any extension brackets or cables to headers/connectors on the motherboard
- Install peripheral devices and make the appropriate connections to headers/connectors on the motherboard

Note:

1 Before installing this motherboard, make sure jumper JP1 is under Normal setting. See this chapter for information about locating JP1 and the setting options.

2 Never connect power to the system during installation; otherwise, it may damage the motherboard.

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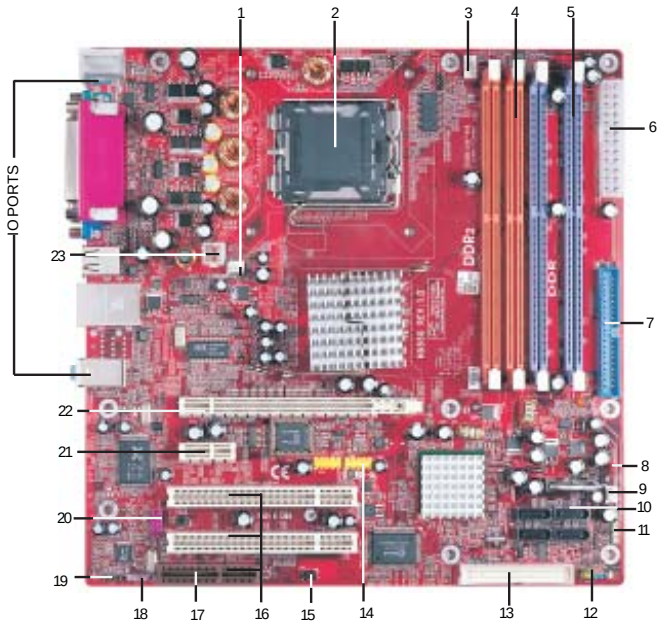
Motherboard Components



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ITEM	LABEL	COMPONENTS	COLOR
1	NB_FAN1	Northbridge cooling fan connector	WHITE
2	CPU Socket	LGA775 Socket for Intel Pentium 4/ Celeron CPUs	WHITE
3	CPU_FAN1	CPU Fan connector(4PIN)	WHITE
4	DIMM1-2	240-pin DDR SDRAM sockets	ORANGE
5	DIMM3-4	184-pin DDR SDRAM sockets (for NB Intel 915GV only	PURPLE
6	PWR1	Standard 24-Pin ATX Power connector	WHITE
7	IDE1	IDE connector	BLUE
8	JP1	Clear CMOS jumper	RED
9	CHS_FAN1	System Fan connector	WHITE
10	SATA1/2	Serial ATA connectors	BLACK
11	SPKR1	Speaker header	LIME
12	PANEL1	Front Panel Switch/LED header	COLOR
13	FDC1	Floppy Disk Drive connector	WHITE
14	USB3/USB4	Front Panel USB header	YELLOW
15	IR1	Infrared header	BLACK
16	PCI 1-2	32-bit PCI slots	WHITE
17	CNR1	CNR slot	BROWN
18	SPDIFO1	SPDIF Out header	LIGHT PURPLE
19	CD1	Analog Audio Input header	BLACK
20	AUDIO2	Front Panel Audio header	PURPLE
21	PCI-E2	PCI Express x16 slot	WHITE
22	PCI-E1	PCI-E Ultra slot *	WHITE
23	PWR2	Standard 4-Pin ATX Power connector	WHITE

* Please see Page 21 for more details about PCI-E Ultra slot.

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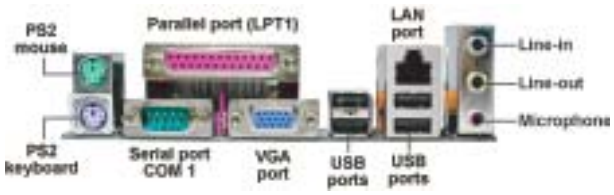
I/O Ports

The illustration below shows a side view of the built-in I/O ports on the motherboard.



PS/2 Mouse	Use the upper PS/2 port to connect a PS/2 pointing device.
PS/2 Keyboard	Use the lower PS/2 port to connect a PS/2 keyboard.
Parallel Port (LPT1)	Use the Parallel port to connect printers or other parallel communications devices.
COM1	Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1.
VGA	Use the VGA port to connect VGA devices.
LAN Port (optional)	Connect an RJ-45 jack to the LAN port to connect your computer to the Network.
USB Ports	Use the USB ports to connect USB devices.
Audio Ports	Use these three audio jacks to connect audio devices. The first jack is for stereo Line-In signal, the second jack for stereo Line-Out signal, and the third jack for Microphone.

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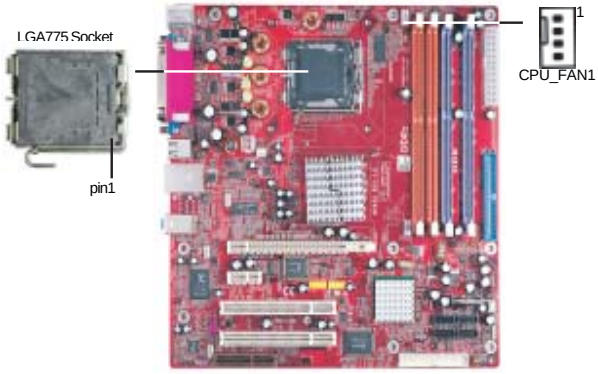
Installing the Processor

This motherboard has a **LGA775** socket for the latest **Intel Pentium 4/Celeron** processors. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

Follow these instructions to install the CPU:



A. Unload the cap
- Use thumb & forefinger to hold the lifting tab of the cap.
- Lift the cap up and remove the cap completely from the socket.

B. Open the load plate
- Use thumb & forefinger to hold the hook of the lever, pushing down and pulling aside unlock it.
- Lift up the lever.
- Use thumb to open the load plate. Be careful not to touch the contacts.

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C. Install the CPU on the socket
   - Orientate CPU package to the socket. Make sure you match triangle marker to pin 1 location.

D. Close the load plate
   - Slightly push down the load plate onto the tongue side, and hook the lever.
   - CPU is locked completely.

E. Apply thermal grease on top of the CPU.

F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

G. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.

Note1:To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.
Note2:The fan connector supports the CPU cooling fan of1.1A~2.2A (26.4W max.) at +12V.

Installing Memory Modules

This motherboard accommodates four memory modules, which are two 184-pin 2.5V DIMM3-4 sockets (Dual Inline Memory Module) for unbuffered DDR**400** memory modules (Double Data Rate SDRAM) and the other two 240-pin 1.8V DIMM1-2 sockets (Dual Inline Memory Module) for unbuffered DDR2 **533**/ DDR400 memory modules (Double Data Rate SDRAM). DDR SDRAM is a type of SDRAM that supports data transfers on both edges of each clock cycle (the rising and falling edges), effectively doubling the memory chip's data throughput. You must install at least one module in any of the four slots. Each module can be installed with 256 MB to 1 GB of memory; total memory capacity is 2 GB.

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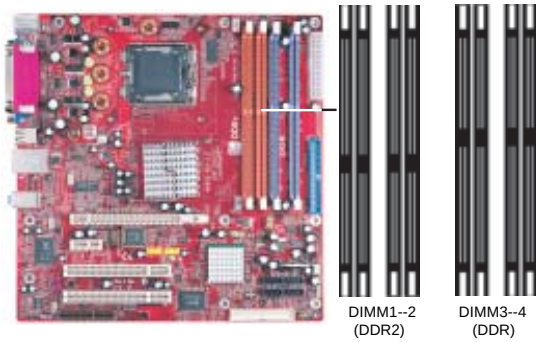

Note1: Please be noted you can **NOT** use DIMM1-2(DDR2 533/DDR400) and DIMM3-4(DDR400) simultaneously. Only use either DDR2(533/400) or DDR(400) memory modules!

Note2: Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

Memory Module Installation Procedure

These modules can be installed with up to 2 GB system memory. Refer to the following to install the memory module.

1. Push down the latches on both sides of the DIMM socket.
2. Align the memory module with the socket. There is a notch on the DIMM socket that you can install the DIMM module in the correct direction. Match the cutout on the DIMM module with the notch on the DIMM socket.
3. Install the DIMM module into the socket and press it firmly down until it is seated correctly. The socket latches are levered upwards and latch on to the edges of the DIMM.
4. Install any remaining DIMM modules.

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Jumper Settings

Connecting two pins with a jumper cap is SHORT; removing a jumper cap from these pins, OPEN.

JP1: Clear CMOS Jumper

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your motherboard from operating. To clear the CMOS memory, disconnect all the power cables from the motherboard and then move the jumper cap into the CLEAR setting for a few seconds.

Function	Jumper
Normal	Short Pins 1-2
Clear CMOS	Short Pins 2-3

Note: To avoid the system unstability after clearing CMOS, we recommend users to enter the main BIOS setting page to “Load Optimal De-faults” and then “Save Changes and Exit”.

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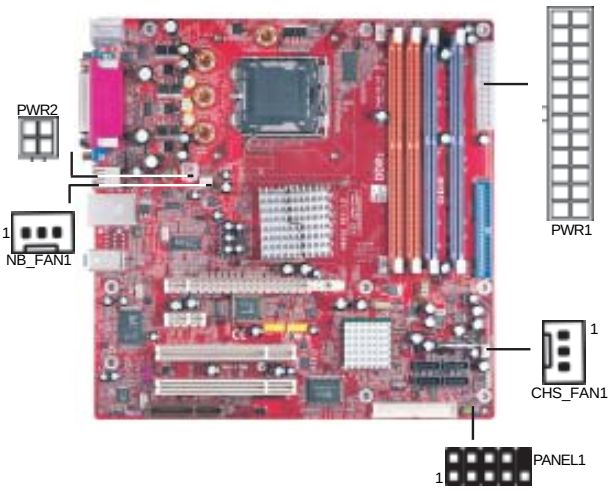
Install the Motherboard

Install the motherboard in a system chassis (case). The board is a Micro ATX size motherboard. You can install this motherboard in an ATX case. Make sure your case has an I/O cover plate matching the ports on this motherboard.

Install the motherboard in a case. Follow the case manufacturer's instructions to use the hardware and internal mounting points on the chassis.



Connect the power connector from the power supply to the **PWR1** connector on the motherboard. The **PWR2** is a +12V connector for CPU Vcore power.

If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **CHS_FAN1** fan power connector on the motherboard.

Connect the Northbridge cooling fan connector to **NB_FAN1**.

Connect the case switches and indicator LEDs to the **PANEL1** header. Please refer to the following list of the PANEL1 pin assignments.

Pin	Signal	Pin	Signal
1	HD_LED_P(+)	2	FP PWR/SLP(+)
3	HD_LED_N(-)	4	FP PWR/SLP(-)
5	RESET_SW_N(-)	6	POWER_SW_P(+)
7	RESET_SW_P(+)	8	POWER_SW_N(-)
9	RSVD_DNU	10	KEY

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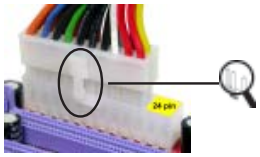
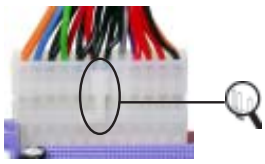
Connecting 20/24-pin power cable



20-pin power cable

Users please note that when installing 20-pin power cable, from the aspect as the picture shows, the latch of power cable falls on the left side of the PWR1 connector latch.



24-pin power cable

Users please note that when installing 24-pin power cable, the latches of power cable and the PWR1 connector match perfectly.

Note: Users please note that the 20-pin and 24-pin power cables can both be connected to the PWR1 connector. While connceting the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the PWR1 connector. However, using 20-pin power cable may cause the system the unbootable or unstable problem because of insufficient electricity. The minimum recommended power is 300W for a fully-configured system.

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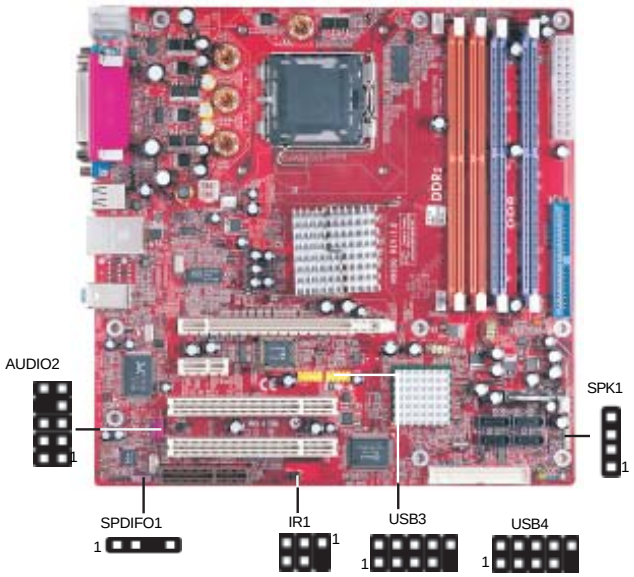
Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



AUDIO2: Front Panel Audio Header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

Pin	Signal	Pin	Signal
1	AUD_MIC	2	AUD_GND
3	AUD_MIC_BIAS	4	AUD_VCC
5	AUD_FPOUT_R	6	AUD_RET_R
7	HP_ON	8	KEY
9	AUD_FPOUT_L	10	AUD_RET_L

USB3/USB4: Front Panel USB Header

The motherboard has USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB headers USB3/USB4 to connect the front-mounted ports to the motherboard.

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Here is a list of headers USB3/USB4 pin assignments.

Pin	Signal	Pin	Signal
1	VERG_FP_USBPWR0	2	VERG_FP_USBPWR0
3	USB_FP_P0(-)	4	USB_FP_P1(-)
5	USB_FP_P0(+)	6	USB_FP_P1(+)
7	GROUND	8	GROUND
9	KEY	10	USB_FP_OC0

1 Locate the USB3/USB4 header on the motherboard.
2 Plug the bracket cable onto the USB3/USB4 header.
3 Remove a slot cover from one of the expansion slots on the system chassis. Install an extension bracket in the opening. Secure the extension bracket to the chassis with a screw.

SPDIFO1: SPDIF Out Header

S/PDIF (Sony/Philips Digital Interface) is a standard audio transfer file format and allows the transfer of digital audio signals from one device to another without having to be converted first to an analog format. Via a specific audio cable, you can connect the SPDIFO1 header (S/PDIF output) on the motherboard to the S/PDIF digital input on the external speakers or AC Decode devices.

Pin	Signal	Pin	Signal
1	SPDIF	2	+5VA
3	KEY	4	GND

SPK1: Speaker Header

Connect the cable from the PC speaker to the SPK1 header on the motherboard.

Pin	Signal
1	SPKR
2	SPKR
3	NC
4	+5V

IR1: Infrared Header

The infrared port allows the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

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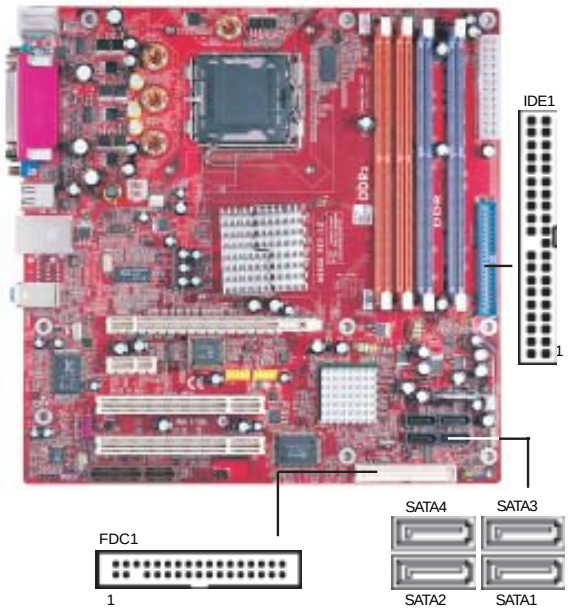
Here is a list of header IR1 pin assignments.

Pin	Signal	Pin	Signal
1	NC	2	KEY
3	+5V	4	GND
5	IRTX	6	IRRX

1 Locate the infrared port-**IR1** header on the motherboard.
2 If you are adding an infrared port, connect the ribbon cable from the port to the IR1 header and then secure the port to an appropriate place in your system chassis.

Install Other Devices

Install and connect any other devices in the system following the steps below.



Floppy Disk Drive

The motherboard ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.

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Install your drives and connect power from the system power supply. Use the cable provided to connect the drives to the floppy disk drive connector **FDC1**.

IDE Devices

IDE devices include hard disk drives, high-density diskette drives, and CD-ROM or DVD-ROM drives, among others.

The motherboard ships with an IDE cable that can support one or two IDE devices. **IDE1** can support up to 2 IDE devices, data transporting in ATA-66/ 100 mode.

Serial ATA Devices

The **Serial ATA (Advanced Technology Attachment)** is the standard interface for the IDE hard drives, which is designed to overcome the design limitations while enabling the storage interface to scale with the growing media rate demands of PC platforms. It provides you a faster transfer rate of **150 MB/s**. If you have installed a Serial ATA hard drive, you can connect the Serial ATA cables to the Serial ATA hard drive or the connecter on the motherboard.

On the motherboard, locate the Serial ATA connectors **SATA1-4**, which support new Serial ATA devices for the highest data transfer rates, simpler disk drive cabling and easier PC assembly.

It eliminates limitations of the current Parallel ATA interface, but maintains register compatibility and software compatibility with Parallel ATA.

Analog Audio Input Header

If you have installed a CD-ROM drive or DVD-ROM drive, you can connect the drive audio cable to the onboard sound system.

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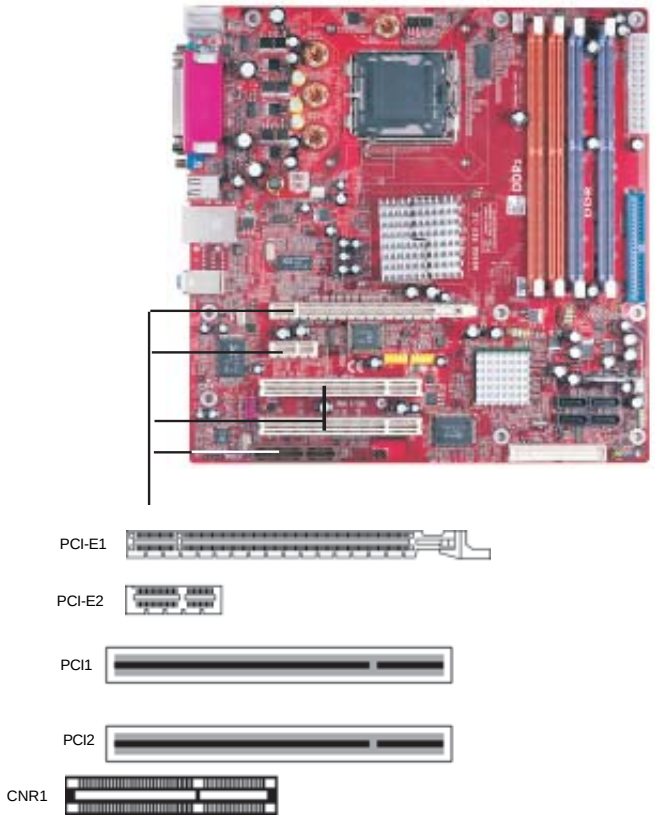
When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed. On the motherboard, locate the 4-pin header **CD1**.

Pin	Signal
1	CD IN L
2	GND
3	GND
4	CD IN R

Expansion Slots

This motherboard has one CNR, one PCI-E Ultra, one PCI-Express x1, and two 32-bit PCI slots.



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Follow the steps below to install an CNR/PCI-E Ultra/PCI Express expansion card.

1 Locate the CNR, PCI-E Ultra and PCI Express slots on the motherboard.
2 Remove the blanking plate of the slot from the system chassis.
3 Install the edge connector of the expansion card into the slot. Ensure the edge connector is correctly seated in the slot.
4 Secure the metal bracket of the card to the system chassis with a screw.

PCI-E1 (PCI-E Ultra) Slot

You can install external PCI Express graphics cards in the PCI-E Ultra slot.

In order to get better performance and compatibility on our special design PCI-E Ultra slot, we recommend you should use one of our tested PCI Express graphics cards that please refer to the following “PCI Express Graphics Card Support List for PCI-E Ultra Slot”.

PCI Express Graphics Card Support List for PCI-E Ultra Slot:

VENDER	BUS	CHIPSET	MANUFACTURE
ATI	16x	ATI Radeon X300Series*	ECS RX300SE-128TD
		ATI Radeon X600Series	GIGABYTE GV-RX60XT 128V
		ATI Radeon X800XT	MSI RX800XT-VDT256E

* ATI ASIC part number: 215RETAKA12FS

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Note1: We recommend you should use our tested PCI Express graphics cards, and you can visit our website for the updated PCI Express graphics card support list : http://www.mercury-pc.com/support.php.
Please be noted we DO NOT guarantee any PCI Express graphics cards which are not in our support list.

Note2: To install the system with an add-on PCI Express graphics card, you must make sure to install the driver of add-on PCI Express graphics card before you install the onboard VGA driver. If the onboard VGA driver has already been installed before you install the add-on PCI Express graphics card, the system will set the onboard VGA as the primary graphics adapter automatically. In this situation, if you want to install the add-on PCI Express graphics card, you need to remove the onboard VGA driver first, and then install the add-on PCI Express graphics card and its driver.

Note3: To perform a normal installation of PCI Express graphics card, you need to install the driver under Windows XP with the Service Pack 1 (SP1).

PCI-E2 (PCI-Express x1) Slot

The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.0a as well.

PCI1-2 Slots

You can install the 32-bit PCI interface expansion cards in the slots.

CNR Slot

You can install CNR (Communications and Networking Riser) cards including LAN, Modem and Audio functions, in this slot.

Dual Monitor

In order to enable "Dual Monitor" Function, users must have "**Two Monitors"**, **"Two Graphics Devices"** (one is for PCI Express graphics card; the other one is for onboard VGA) and Windows 2000 or Windows XP that supports the Dual Monitor Function.

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Chapter 3 BIOS Setup Utility

Introduction

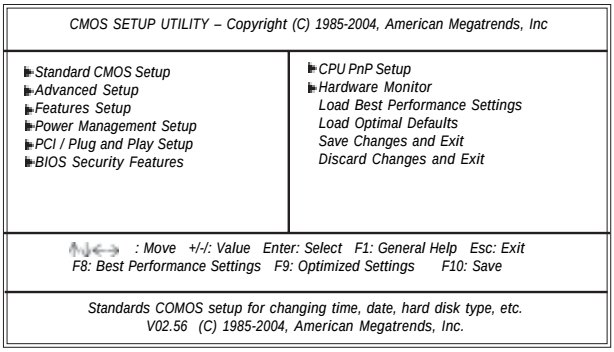
The BIOS Setup Utility records settings and information of your computer, such as date and time, the type of hardware installed, and various configuration settings. Your computer applies the information to initialize all the components when booting up and basic functions of coordination between system components.

If the Setup Utility configuration is incorrect, it may cause the system to malfunction. It can even stop your computer booting properly. If it happens, you can use the clear CMOS jumper to clear the CMOS memory which has stored the configuration information; or you can hold down the **Page Up** key while rebooting your computer. Holding down the **Page Up** key also clears the setup information.

You can run the setup utility and manually change the configuration. You might need to do this to configure some hardware installed in or connected to the motherboard, such as the CPU, system memory, disk drives, etc.

Running the Setup Utility

Every time you start your computer, a message appears on the screen before the operating system loading that prompts you to "*Hit <DEL>if you want to run SETUP*". Whenever you see this message, press the **Delete** key, and the Main menu page of the Setup Utility appears on your monitor.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc
Standard CMOS Setup
Advanced Setup
Features Setup
Power Management Setup
PCI / Plug and Play Setup
BIOS Security Features
CPU PnP Setup
Hardware Monitor
Load Best Performance Settings
Load Optimal Defaults
Save Changes and Exit
Discard Changes and Exit
: Move +/-/: Value Enter: Select F1: General Help Esc: Exit
F8: Best Performance Settings F9: Optimized Settings F10: Save
Standards COMOS setup for changing time, date, hard disk type, etc.
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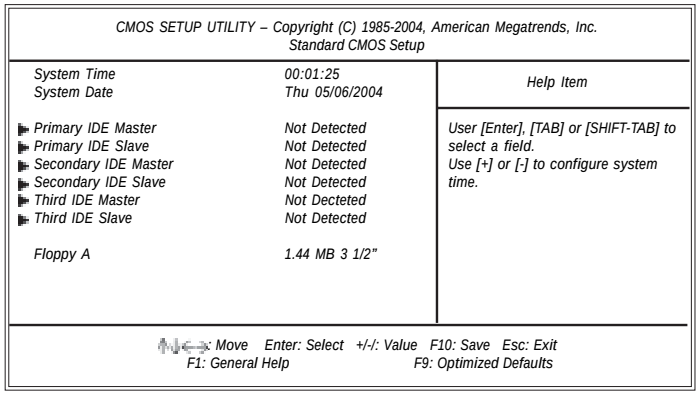
You can use cursor arrow keys to highlight anyone of options on the main menu page. Press **Enter** to select the highlighted option. Press the **Escape** key to leave the setup utility. Press +/-/ to modify the selected field's values.

Some options on the main menu page lead to tables of items with installed values that you can use cursor arrow keys to highlight one item, and press **+** and **-** keys to cycle through alternative values of that item. The other options on the main menu page lead to dialog boxes requiring your answer OK or Cancel by selecting **[OK]** or **[Cancel]**.

If you have already changed the setup utility, press **F10** to save those changes and exit the utility. Press **F1** to display a screen describing all key functions. Press **F9** to install the setup utility with a set of default values. Press **F8** to install the setup utility with a set of high-performance values.

Standard CMOS Setup Page

This page displays a table of items defining basic information about your system.



System Date & System Time

These items set up system date and time.

Primary IDE Master/Primary IDE Slave/Secondary IDE Master/Secondary IDE Slave/Third IDE Master/Third IDE Slave

Your computer has one IDE channel and each channel can be installed with one or two devices (Master and Slave). In addition, this motherboard supports four SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.

Floppy A

These items set up size and capacity of the floppy diskette drive installed in the system.

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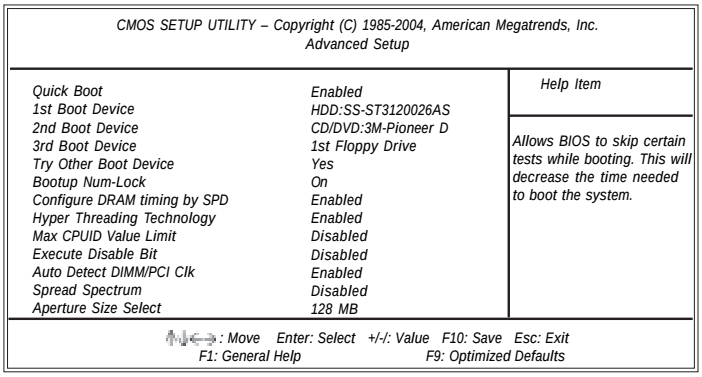
Advanced Setup Page

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
Advanced Setup
Quick Boot Enabled
1st Boot Device HDD:SS-ST3120026AS
2nd Boot Device CD/DVD:3M-Pioneer D
3rd Boot Device 1st Floppy Drive
Try Other Boot Device Yes
Bootup Num-Lock On
Configure DRAM timing by SPD Enabled
Hyper Threading Technology Enabled
Max CPUID Value Limit Disabled
Execute Disable Bit Disabled
Auto Detect DIMM/PCI Clk Enabled
Spread Spectrum Disabled
Aperture Size Select 128 MB
Help Item
Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help F9: Optimized Defaults

Quick Boot

If you enable this item, the system starts up more quickly be elimination some of the power on test routines.

1st Boot Device/2nd Boot Device/3rd Boot Device

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

Try Other Boot Device

If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.

BootUp Num-Lock

This item determines if the Num Lock key is active or inactive at system start-up time.

Configure DRAM Timing by

This item allows you to enable or disable the DRAM timing defined by the Serial Presence Detect electrical.

Hyper Threading Technology

If your P4 CPU is not HT CPU, this item will be hidden.

If your P4 CPU is HT CPU, BIOS will show this item. You can set “Disabled” or “Enabled” to control HT CPU support in O.S. Set “Enabled” to test HT CPU function.

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Max CPUID Value Limit

When this item is enabled, you can use Prescott CPU and LGA-775 CPU and there will be a normal NT4.0 installation; otherwise, the automatically restarting will occur while installing.

Execute Disable Bit

It allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation. Replacing older computers with Execute Disable Bit-enabled systems can halt worm attacks, reducing the need for virus related repairs.

Auto Detect DIMM/PCI Clk

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum

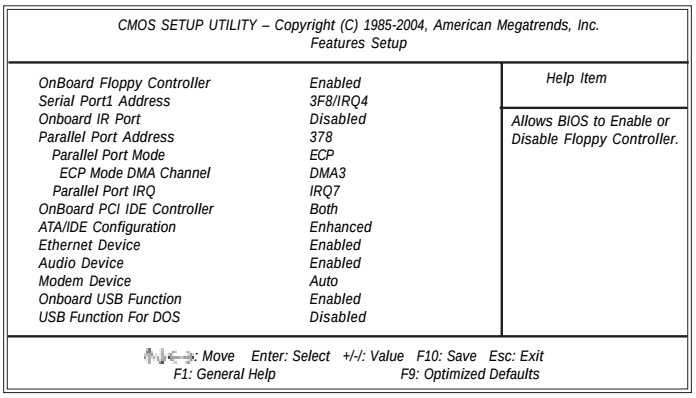
If you enable spread spertrum, it can significantly reduce the EMI (Electro-Magnetic interface) generated by the system.

Aperture Size Select

This item defines the size of aperture if you use a graphic adapter.

Features Setup Page

This page sets up some parameters for peripheral devices connected to the system.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
Features Setup
OnBoard Floppy Controller Enabled
Serial Port1 Address 3F8/IRQ4
Onboard IR Port Disabled
Parallel Port Address 378
Parallel Port Mode ECP
ECP Mode DMA Channel DMA3
Parallel Port IRQ IRQ7
OnBoard PCI IDE Controller Both
ATA/IDE Configuration Enhanced
Ethernet Device Enabled
Audio Device Enabled
Modem Device Auto
Onboard USB Function Enabled
USB Function For DOS Disabled
Help Item
Allows BIOS to Enable or Disable Floppy Controller.
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help F9: Optimized Defaults

OnBoard Floppy Controller

Use this item to enable or disable the onboard floppy disk drive interface.

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Serial Port1 Address

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

Onboard IR Port

Use this item to enable or disable the onboard IR port function.

Parallel Port Address

Use this item to enable or disable the onboard Parallel port, and to assign a port address.

Parallel Port Mode (ECP)

Use this item to select the parallel port mode. You can select Normal (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or BPP (Bi-Directional Parallel Port).

ECP Mode DMA Channel

Use this item to assign the DMA Channel under ECP Mode function.

Parallel Port IRQ

Use this item to assign IRQ to the parallel port.

OnBoard PCI IDE Controller

Use this item to enable or disable either or both of the onboard Primary and Secondary IDE channels.

ATA/IDE Configuration

The ATA/IDE option can be configured as either “Enhanced (default)” or “Compatible” in the BIOS configuration. Windows* 98SE and Windows* Me operating systems do not support Enhanced mode IDE/Serial ATA resources for more than four devices. If the ATA/IDE option is set to Enhanced mode, the operating installation will not be able to recognize the drive, and the installation will fail. Before installing 98SE or Me, the ATA/IDE configuration must be changed from Enhanced to Compatible mode.

Ethernet Device

Use this item to enable or disable the onboard Ethernet.

Audio Device

Use this item to enable or disable the onboard audio.

Modem Device

This item enables or disables the onboard Modem.

Onboard USB Function

Enable this item if you plan to use the USB ports on this motherboard.

USB Function For DOS

Enable this item if you plan to use the USB ports on this motherboard in a DOS environment.

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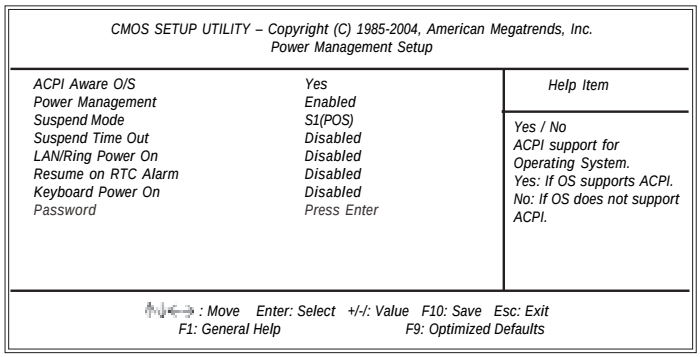
Power Management Setup Page

This page sets some parameters for system power management operation.



ACPI Aware O/S

This itme supports ACPI (Advanced Configuraion and Power Management Interface). Use this item to enable or disable the ACPI feature.

Power Management

Use this item to enable or disable a power management scheme. If you enable power management, you can use this item below to set the power management operation. Both APM and ACPI are supported.

Suspend Mode

Use this item to define how your system suspends. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Suspend Time Out

This item sets up the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.

LAN/Ring Power On

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem/ Ring, or traffic on the network adapter. You must use an ATX power supply in order to use this feature.

Resume on RTC Alarm

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC

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(realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Keyboard Power On

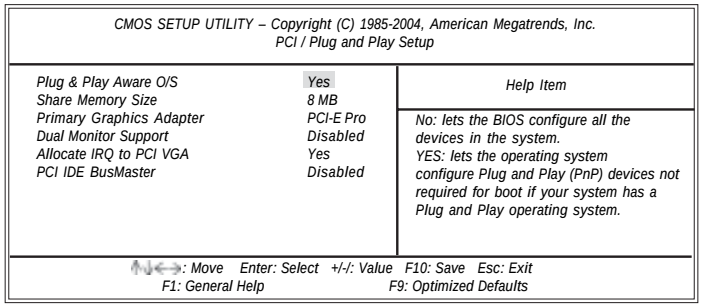
If you enable this item, the system can automatically resume by pressing any keys, power key, or typing in the password on the keyboard. You must use an ATX power supply in order to use this feature.

Password

When Keyboard Power On is set to “Password”, this item is available and users can enter the password.

PCI / Plug and Play Setup Page

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
PCI / Plug and Play Setup
Plug & Play Aware O/S
Share Memory Size
Primary Graphics Adapter
Dual Monitor Support
Allocate IRQ to PCI VGA
PCI IDE BusMaster
Yes
8 MB
PCI-E Pro
Disabled
Yes
Disabled
Help Item
No: lets the BIOS configure all the devices in the system.
YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help
F9: Optimized Defaults

Plug & Play Aware O/S

This itme select which, the BIOS or the operating system, will configure all the devices in the system. If set NO, the BIOS configures the system; set YES, the operating system configure Plug and Play devices.

Share Memory Size

This item lets you allocate a portion of the main memory for the onboard VGA display application with these options of Disabled, 1 MB and 8 MB.

Primary Graphics Adapter

This itme indicates if the primary graphics adapter uses the Onboard VGA, PCI-E Pro, or PCI VGA.

Dual Monitor Support

This item is a switch to turn on/off the Dual Monitor function. If it is enabled, please connect the system to two monitors for performing the Dual Monitor function; if disabled, this function will be turned off.

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Allocate IRQ to PCI VGA

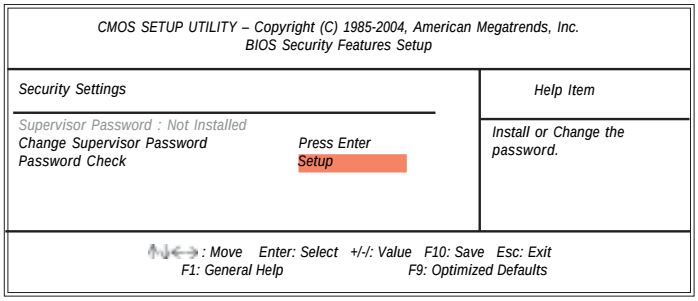
If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

PCI IDE BusMaster

This item enables or disabled the DMA under DOS mode. We recommend you to leave this item at the default value.

BIOS Security Features Setup Page

This page helps you install or change a password.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
BIOS Security Features Setup
Security Settings
Help Item
Supervisor Password : Not Installed
Change Supervisor Password
Press Enter
Password Check
Setup
Install or Change the password.
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help
F9: Optimized Defaults

Supervisor Password

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change Supervisor Password

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

Password Check

This item enables users to choose the time when the system will perform password check.

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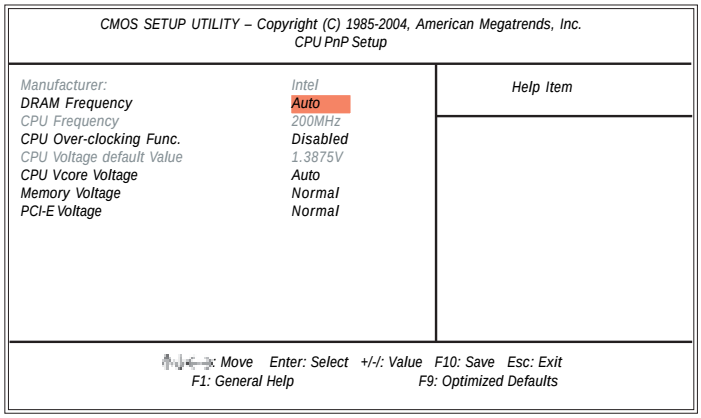
CPU PnP Setup Page

This page helps you manually configure the mainboard for the CPU. The system will automatically detect the type of installed CPU and make the appropriate adjustments to the items on this page.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
CPU PnP Setup
Manufacturer: Intel
DRAM Frequency Auto
CPU Frequency 200MHz
CPU Over-clocking Func. Disabled
CPU Voltage default Value 1.3875V
CPU Vcore Voltage Auto
Memory Voltage Normal
PCI-E Voltage Normal
Help Item
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help F9: Optimized Defaults

Manufacturer

These items show the brand of the CPU installed in your system.

DRAM Frequency

This item shows the frequency of the DRAM in your system.

CPU Frequency

This item shows the frequency of the CPU installed in your system.

CPU Over-clocking Func.

This item decides the CPU over-clocking function installed in your system. If the over-clocking fails, please turn off the system power. And then, hold the PageUp key (similar to the Clear CMOS function) and turn on the power, the BIOS will recover the safe default.

CPU Voltage default Value

This item identifies the CPU default voltage value. The value may change depending on the CPU you installed on the motherboard.

CPU Vcore Voltage

This item enables users to adjust the CPU voltage.

Memory Voltage

This item determines the DDR voltage adjustment.

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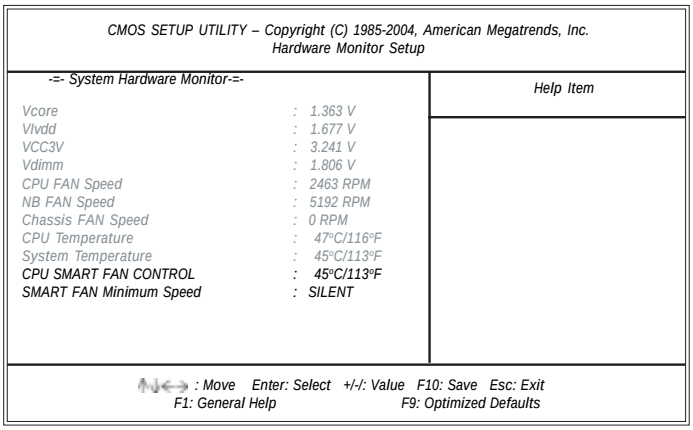
PCI-E Voltage

This item determines the PCI Express voltage adjustment.

Hardware Monitor Page

This page sets up some parameters for the hardware monitoring function of this motherboard.


CMOS SETUP UTILITY – Copyright (C) 1985-2004, American Megatrends, Inc.
Hardware Monitor Setup
-=- System Hardware Monitor-=-
Help Item
Vcore : 1.363 V
Vlvdd : 1.677 V
VCC3V : 3.241 V
Vdimm : 1.806 V
CPU FAN Speed : 2463 RPM
NB FAN Speed : 5192 RPM
Chassis FAN Speed : 0 RPM
CPU Temperature : 47°C/116°F
System Temperature : 45°C/113°F
CPU SMART FAN CONTROL : 45°C/113°F
SMART FAN Minimum Speed : SILENT
: Move Enter: Select +/-/: Value F10: Save Esc: Exit
F1: General Help F9: Optimized Defaults

CPU/System Temperature

These items display CPU and system temperature measurement.

FANs & Voltage Measurements

These items indicate cooling fan speeds in RPM and the various system voltage measurements.

CPU SMART FAN CONTROL

Use this item to set the CPU SMART FAN control. When the system temperature is below 45°C, the SMART FAN is running in SILENT mode, while above 45°C, the SMART FAN will be running at full speed mode.

SMART FAN Minimum Speed

This item enables users to select the minimum speed of the SMART FAN when the system temperature is below the value set at the above item. Here users have three modes to choose from, SILENT, LOW and MIDDLE.

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Load Best Performance Settings

If you select this item and press **<Enter>** a dialog box appears. If you select **[OK]**, and then press **<Enter>**, the Setup Utility loads a set of best performance default values. These default values are quite demanding and **your system might malfunction or be unstable** if you are using slower memory chips or other low-performance components.

Load Optimal Defaults

If you select this item and press **<Enter>** a dialog box appears. If you select **[OK]**, and then press **<Enter>**, the Setup Utility loads a set of fail-safe default values. These default values are not very demanding and they should allow your system to function with most kinds of hardware and memory chips.

Save Changes and Exit

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility configuration. When the Save Changes and Exit dialog box appears, select [OK] to save and exit, or [Cancel] to return to the main menu.

Discard Changes and Exit

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Discard Changes and Exit dialog box appears, select [OK] to discard changes and exit, or [Cancel] to return to the main menu.

Note: If you have made settings that you do not want to save, use the "Discard Changes and Exit" item and select [OK] to discard any changes you have made.

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Chapter 4 Software & Applications

Introduction

This chapter describes the contents of the support CD-ROM that comes with the motherboard package.

The support CD-ROM contains all useful software, necessary drivers and utility programs to properly run our products. More program information is available in a README file, located in the same directory as the software.

To run the support CD, simply insert the CD into your CD-ROM drive. An Auto Setup screen automatically pops out, and then you can go on the auto-installing or manual installation depending on your operating system.

If your operating system is Windows 2000/XP, it will automatically install all the drivers and utilities for your motherboard.

Note: This motherboard doesn't support operating system Windows 98SE/ME.

Installing Support Software

1. Insert the support CD-ROM disc in the CD-ROM drive.
2. When you insert the CD-ROM disc in the system CD-ROM drive, the CD automatically displays an Auto Setup screen.
3. The screen displays three buttons of **Setup**, **Browse CD** and **Exit** on the right side, and three others **Setup**, **Application** and **ReadMe** at the bottom. Please see the following illustration.

The **Setup** button runs the software auto-installing program as explained in next section.

The **Browse CD** button is a standard Windows command that you can check the contents of the disc with the Windows 98 file browsing interface.

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The **Exit** button closes the Auto Setup window. To run the program again, reinsert the CD-ROM disc in the drive; or click the CD-ROM driver from the Windows Explorer, and click the Setup icon.

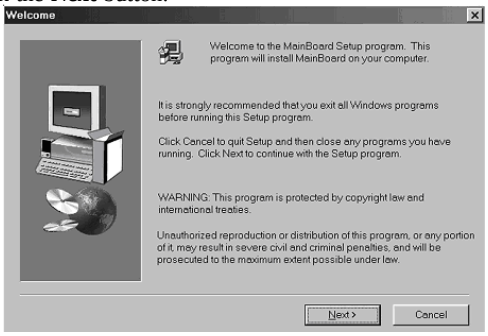
The **Application** button brings up a software menu. It shows the bundled software that this mainboard supports.

The **ReadMe** brings you to the Install Path where you can find out path names of software driver.

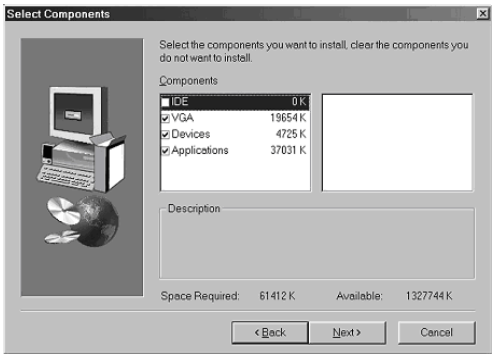
Auto-Installing under Windows 2000/XP

If you are under Windows 2000/XP, please click the **Setup** button to run the software auto-installing program while the Auto Setup screen pops out after inserting the support CD-ROM:

1 The installation program loads and displays the following screen. Click the **Next** button.


Welcome
Welcome to the MainBoard Setup program. This program will install MainBoard on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

2 Select the items that you want to setup by clicking on it (the default options are recommended). Click the **Next** button to proceed.



3 The support software will automatically install.

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Once any of the installation procedures start, software is automatically installed in sequence. You need to follow the onscreen instructions, confirm commands and allow the computer to restart as few times as needed to complete installing whatever software you selected. When the process is finished, all the support software will be installed and start working.

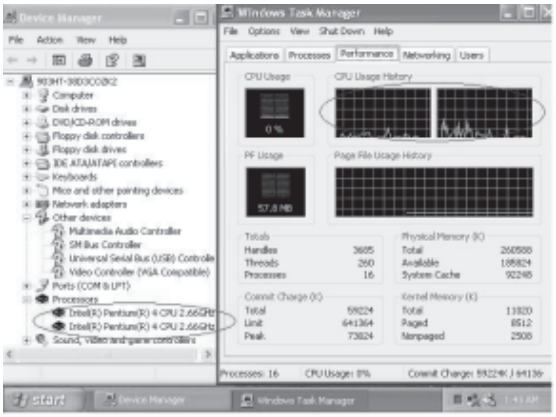
Bundled Software Installation

All bundled software available on the CD-ROM is for users' convenience. You can install bundled software as follows:

1 Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
2 A software menu appears. Click the software you want to install.
3 Follow onscreen instructions to install the software program step by step until finished.

Hyper-Threading CPU

While you are in Windows Task Manager, please push down ctrl+Alt Del keys. A dual CPU appears in the CPU Usage History&Device Manager under WinXP.



Note: Hyper-Threading Function only works under WINXP Operating System; therefore, disable it under other Operating System.

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